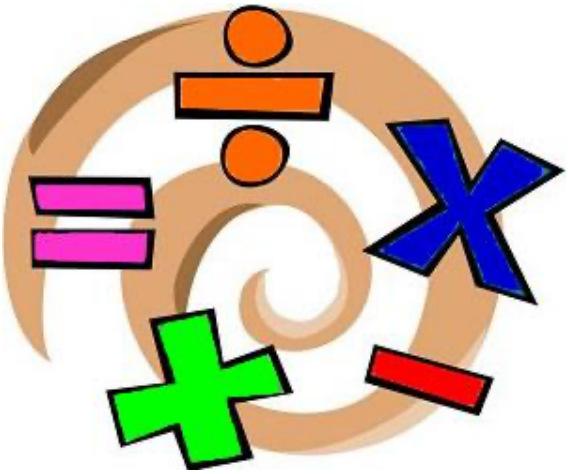
Student Name:_____

Mathematics
Summer Review Packet

(Optional-Please submit to 7th grade teacher)

For ALL Students Entering 7th Grade

Fall 2025



Medford Public Schools
Department of Mathematics

📚 **Printed Copies Available:**
If you prefer a paper copy, please don't hesitate to reach out before the school year ends. The Medford Public Library will have a limited number of paper copies available for students throughout the summer.

🧠 **ST Math Practice:**
Additionally, students are encouraged to complete 20 minutes of ST math a week. Students should log in through Clever using your district login.

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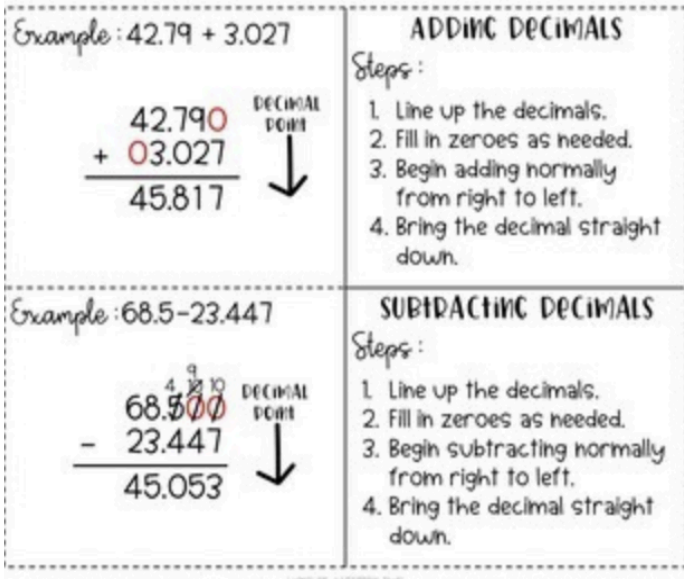
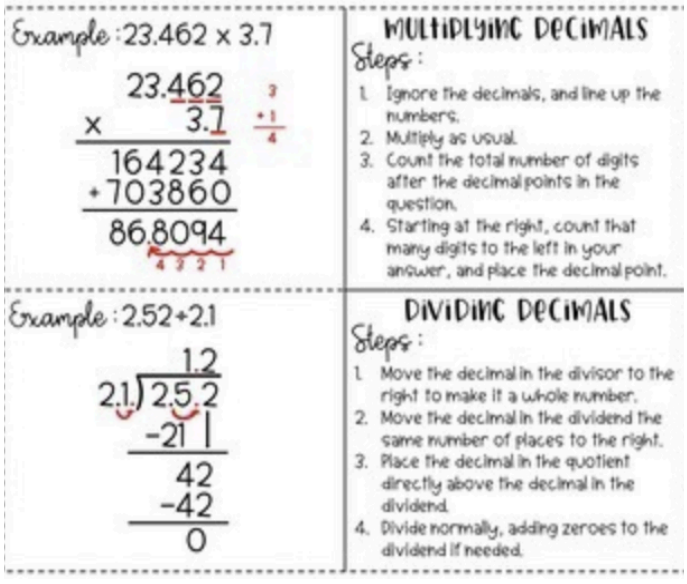
Week 1: Number System

Decimal Operations:





Skills Practice

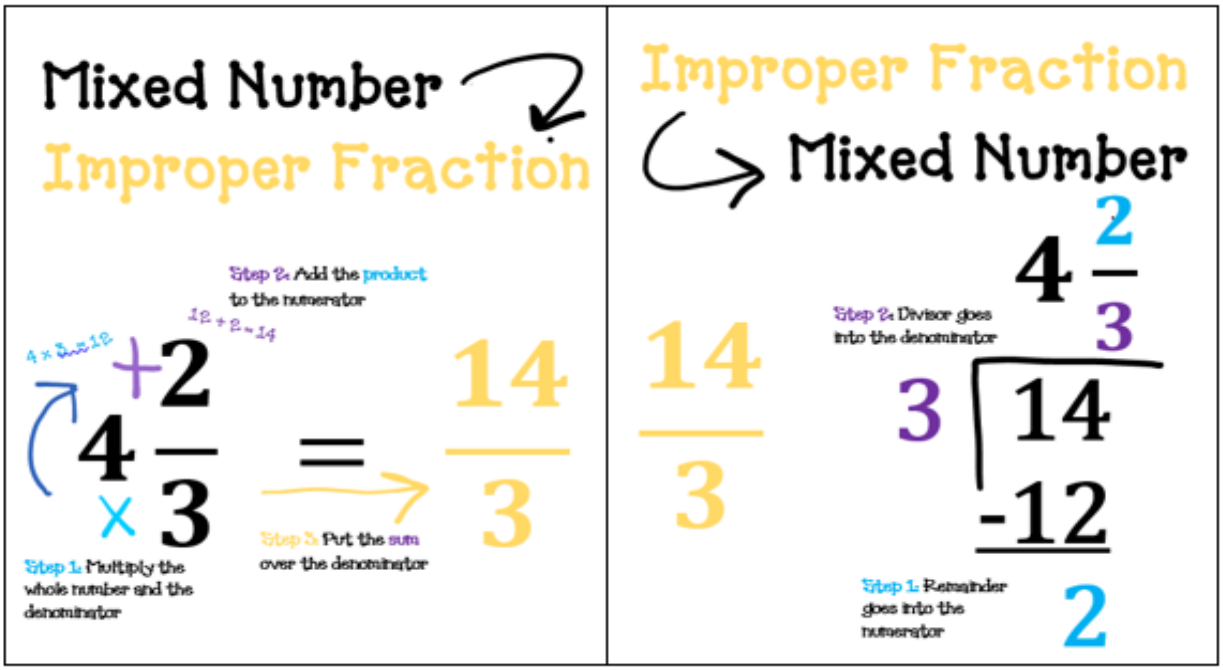
8.78 + 6.2 =	21.9 - 4.5 =	23.75 + 6.048	46 - 3.63
7.2 x 5	7.86 ÷ 0.2	0.13 x 5.1	9.585 ÷ 5

Problem-Solving

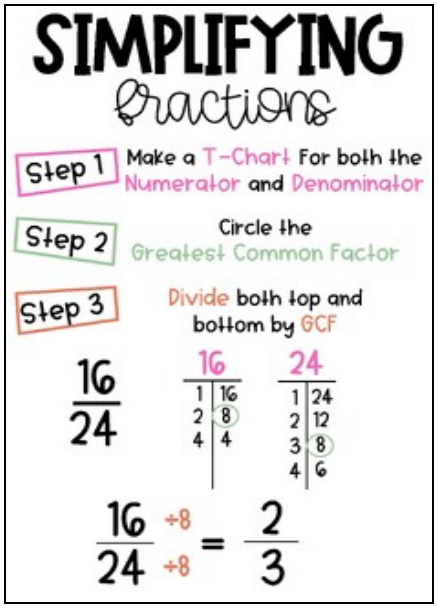
Sam, Jessie, and Emma go out for burgers. The total cost is $21.39. If they split the cost equally, how much will each person pay?	Amy and Bhanu both compete in a race. Amy takes 42.8 seconds to finish, and Bhan finishes in 49.27 seconds. How many seconds faster was Amy than Bhanu?

Potatoes cost $0.85 per pound. Luca bought 2.75 pounds of potatoes. How much did he pay for the potatoes? Round to the hundredth place.	Ana Maria has $10. Will she be able to buy a burger for $5.49, chips for $1.29, and a milkshake for $2.79? Explain your reasoning.

Fractions:



Change each improper fraction into a mixed number:				
$\frac{10}{4}$	$\frac{7}{6}$	$\frac{12}{5}$	$\frac{32}{7}$	$\frac{110}{12}$
Change each improper fraction into a mixed number:				
$7\frac{1}{2}$	$4\frac{1}{3}$	$11\frac{2}{5}$	$3\frac{5}{12}$	$2\frac{1}{7}$



Simplify the following fractions:

$\frac{12}{30}$	$\frac{4}{10}$	$\frac{17}{51}$
$\frac{10}{35}$	$\frac{24}{108}$	$\frac{13}{39}$

Skills Practice

Steps for <u>adding</u> and <u>subtracting</u> mixed numbers:

1. Change each mixed number to an improper fraction (if there are mixed numbers)
2. Find the lowest common denominator (LCD or LCM)
3. Write the equivalent fractions using the LCD
4. Add or subtract the numerators
5. Add the whole numbers and fractions
6. Simplify your answer (rewrite improper fraction to mixed number and in lowest term)

Steps for <u>multiplying</u> fractions and mixed numbers:

1. Change each mixed number to an improper fraction if there are mixed numbers or rewrite whole number as fraction
2. Multiply the numerators
3. Multiply the denominators
4. Simplify your answer (rewrite improper fractions to mixed number and in lowest terms)

Steps for <u>dividing</u> fractions and mixed numbers:

1. Change each mixed number to an improper fraction or rewrite whole number as fraction
2. Change the division to multiplication
3. Flip the second number(reciprocal)
4. Multiply the numerators. Multiply the denominators
5. Simplify your answer (rewrite improper fractions to mixed number and in lowest terms)

$\frac{5}{6}+\frac{7}{8}=$	$10\frac{1}{5}-2\frac{2}{3}=$	$1\frac{3}{5}-2\frac{1}{2}=$	$\frac{1}{2}+\frac{3}{7}=$

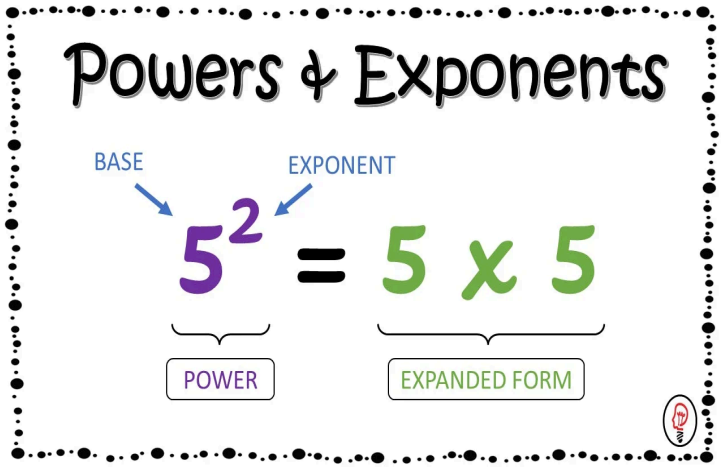
$1\frac{3}{4}$ x $2\frac{1}{2}$ =	$\frac{3}{8}$ x 12 =	$18 \div 1\frac{1}{2}$ =	$10\frac{4}{5}$ x $1\frac{5}{8}$ =

Problem Solving

Tom bought a board that was $\frac{7}{8}$ of a yard long. He cut off $\frac{1}{2}$ of a yard. How much was left?	Kelly ran $2\frac{1}{4}$ miles. Amber ran $\frac{1}{3}$ of the distance that Kelly ran. How far did Amber run?
John bought $\frac{3}{4}$ of a pound of jelly beans and $\frac{5}{8}$ of a pound of gummy bears. How many pounds of candy did he buy in all?	Six friends share $\frac{4}{5}$ of a pizza equally. What fraction of the pizza will each friend get?

Week 2: Number System (Continued)

Exponents:



5^3	4^2	3^3
1^7	10^3	2^6
6^3	7^0	8^1

Order of Operations:

Order of Operations

PEMDAS

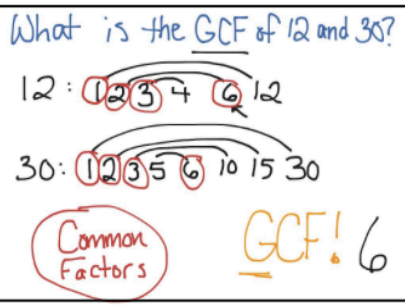
P	Parenthesis, ()
E	Exponents, a^n
M D	Multiplication or Division (Left to right)
A S	Addition or Subtraction (Left to Right)

$5 \cdot (4 + 2) - 3^3$		
$7 + (9^1 \cdot 2) \div 6$		
$8 + 9^2 - (5 + 6)$	$13 - 7 \cdot 12^0$	$(2 + 6)^2 + 7$

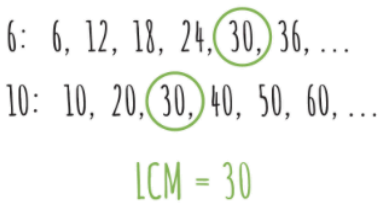
Greatest Common Factor/Least Common Multiple:

Finding GCFs

1. List the factors for each number.
2. Look for the factors that both numbers have in common.
3. The common factor with the biggest value will be your Greatest Common Factor (GCF).



Finding LCMs



1. List the multiples for each number.
2. Look for the multiples that both numbers have in common.
3. The common multiple with the smallest value will be your Least Common Multiple (LCM).

Find the Greatest Common Factor for each set of numbers:

6 and 15	32 and 56
10, 20, and 25	36 and 96

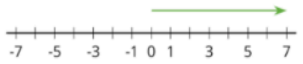
Find the Least Common Multiple for each set of numbers:

6 and 9	5 and 7
12 and 16	3, 6, and 15

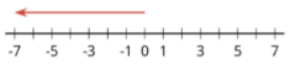
Week 3: Number System (Continued)

Integers:

Positive Numbers
- Numbers that are **GREATER** than 0 are called positive numbers.
- They are located to the **RIGHT** or above 0 on a number line.
- They can be written with or without a plus sign. (Ex: 3, +3)



Negative Numbers
- Numbers that are **LESS** than 0 are called negative numbers.
- They are located to the **LEFT** or below 0 on a number line.
- They are **ALWAYS** written with a negative sign. (Ex: -6, -4)



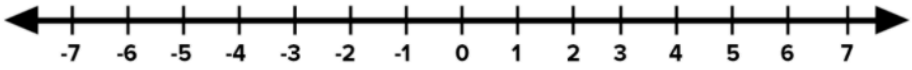
Positive Number if you see...	Negative Number if you see...
• Increase • Going Up • Moving Forward • Above • Deposit (Put in $) • Gain • Earn • Rise • Elevate • Growth • Higher	• Decrease • Going Down • Moving Backward • Below • Withdraw (Take out $) • Loss • Spend • Owe • Fall • Lower

Write an integer for each of the following situations:

The fish jumped 2 feet above the surface of the water.	_____
Katie made a profit of 37 dollars from selling bracelets.	_____
The temperature is 8 degrees below freezing.	_____
Lisa made a withdrawal of 65 dollars.	_____
The hot air balloon rose 4 feet.	_____

Positive and Negative Numbers on a Number Line

On a horizontal number line, the numbers become **greater** as you move to the **right**, and the numbers become **smaller** as you move to the **left**.

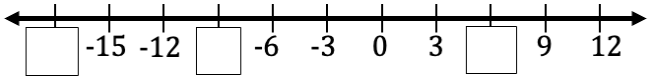


4 is **greater** than 1 and -4 is **less** than -1.

Graph the set of integers on the number line below and label each point.

1 −3 5 −1 3

Fill in the blanks on the number line below.



Decide whether each inequality statement is true or false.

$-5 > 2$ $-12 > -15$

$3 > -8$ $-12.5 > -12$

Use <, >, or = to compare each pair of numbers:

-7 ◯ -8 5 ◯ -9

-3.5 ◯ -3 6.5 ◯ 6 ½

For each number, write its opposite. -1.5 _____ 8 _____

234 _____ -14 _____

For each number, write its opposite.

3.2 _____ -⅔ _____

-7 _____ 1 _____

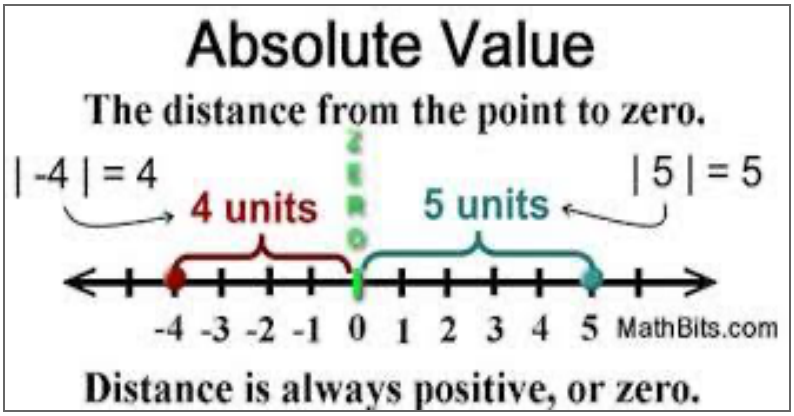
Place the following numbers in order from LEAST to GREATEST:

-2 -1 3 -1.5 -4

Order the following from GREATEST to LEAST:

10 -11 4.5 -5 -23

Absolute Value:



Find the absolute value of the numbers below:

$\left\|2\frac{1}{2}\right\|$	$\|-4\|$	$\|12\|$
$\|100\|$	$\|-2.7\|$	$\|-29\|$
$-\|45\|$	$\|29{,}035\|$	$-\|-247\|$

Compare each pair of expressions using >, <, or =.

- 2 _____ -17
- 2 _____ |-17|
- |-27| _____ |-45|
- |-27| _____ -45

Put these numbers in order, from least to greatest.

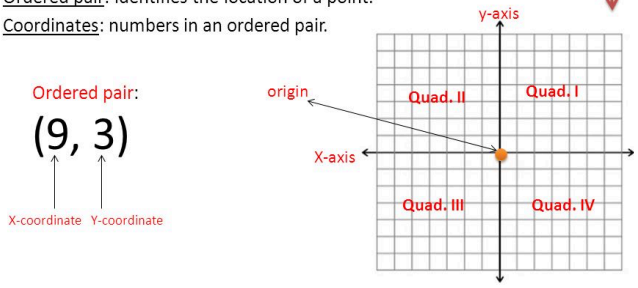
$|-1|, |-2|, -3, -4$

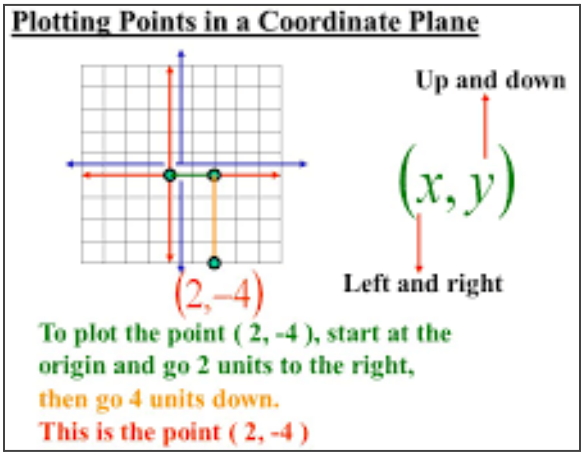
Put these numbers in order, from greatest to least.

$|8|, |-10|, 7, -9$

Coordinate Plane:

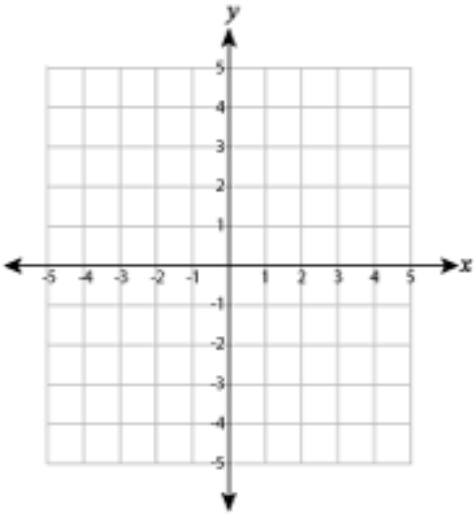
Coordinate Plane: two number lines that intersect at right angles.
X-axis: the horizontal axis.
Y-axis: the vertical axis.
Origin: where the axis intersect.
Quadrants: the four sections that make up the coordinate plane.
Ordered pair: identifies the location of a point.
Coordinates: numbers in an ordered pair.





A) Plot each point on the coordinate plane.

1) Z(2, 5)
2) K(5, −3)
3) U(−3, 4)
4) A(−2, −2)
5) R(4, −1)
6) X(−3, 2)
7) V(−5, −2)
8) P(3, 5)
9) Y(0, 1)
10) T(1, 2)



Week 4: Ratios and Proportional Relationships

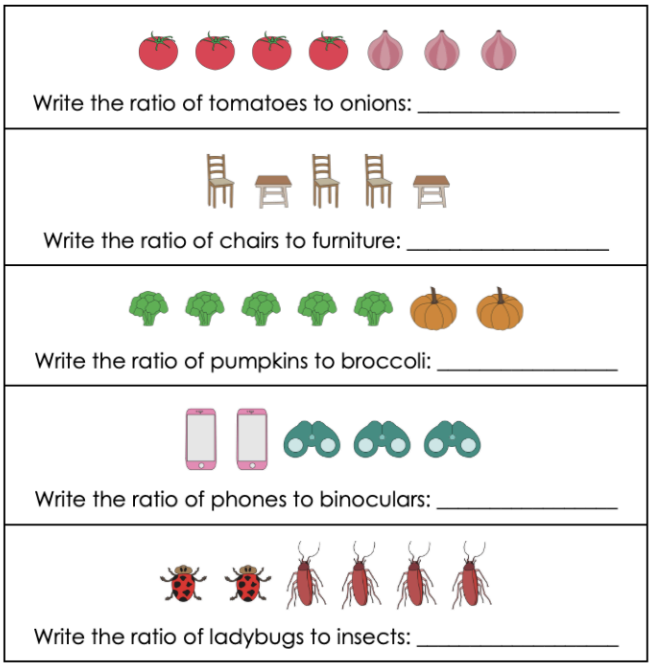
Ratios:

A ratio is a comparison of two quantities. Ratios can be expressed three ways.

1:10 | 1 to 10 | $\frac{1}{10}$

Sam has 2 cats, 1 bird, 2 hamsters and 4 dogs.

Whole to Part Animals to hamsters.	9:2 / 9 to 2	$\frac{9}{2}$
Part to Part Birds to cats.	1:2 / 1 to 2	$\frac{1}{2}$
Part to Whole Dogs to animals.	4:9 / 4 to 9	$\frac{4}{9}$



Equivalent Ratios:

You can find equivalent ratios by multiplying or dividing by the same number.

Example:

5:20

Multiply

$5:20 \rightarrow \frac{5}{20}$

$\frac{5}{20} \cdot \frac{2}{2} = \frac{5 \cdot 2}{20 \cdot 2} = \frac{10}{40}$

$\frac{10}{40} \rightarrow 10:40$

Divide

$5:20 \rightarrow \frac{5}{20}$

$\frac{5}{20} \div \frac{5}{5} = \frac{5 \div 5}{20 \div 5} = \frac{1}{4}$

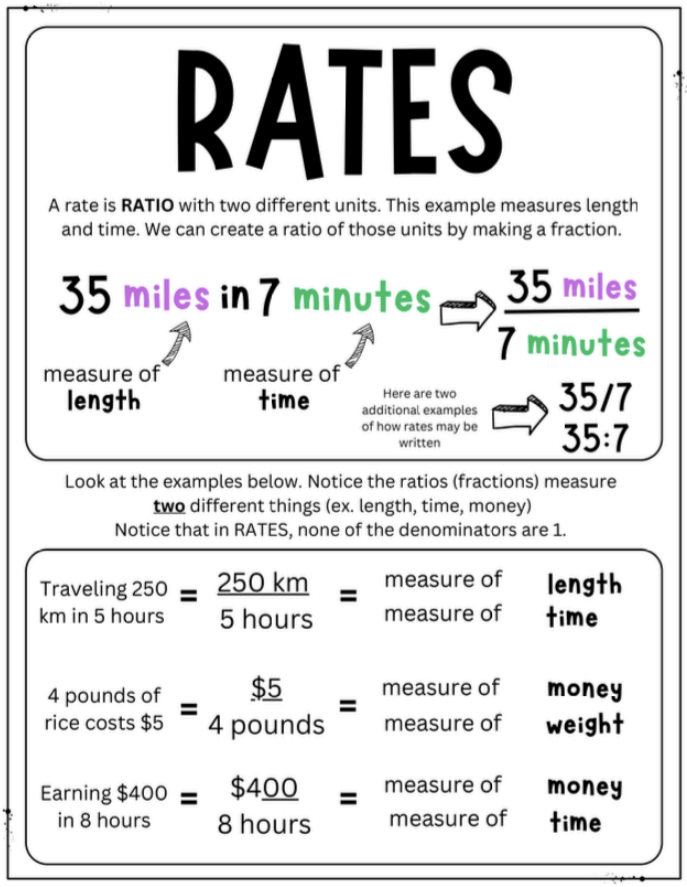
$\frac{1}{4} \rightarrow 1:4$

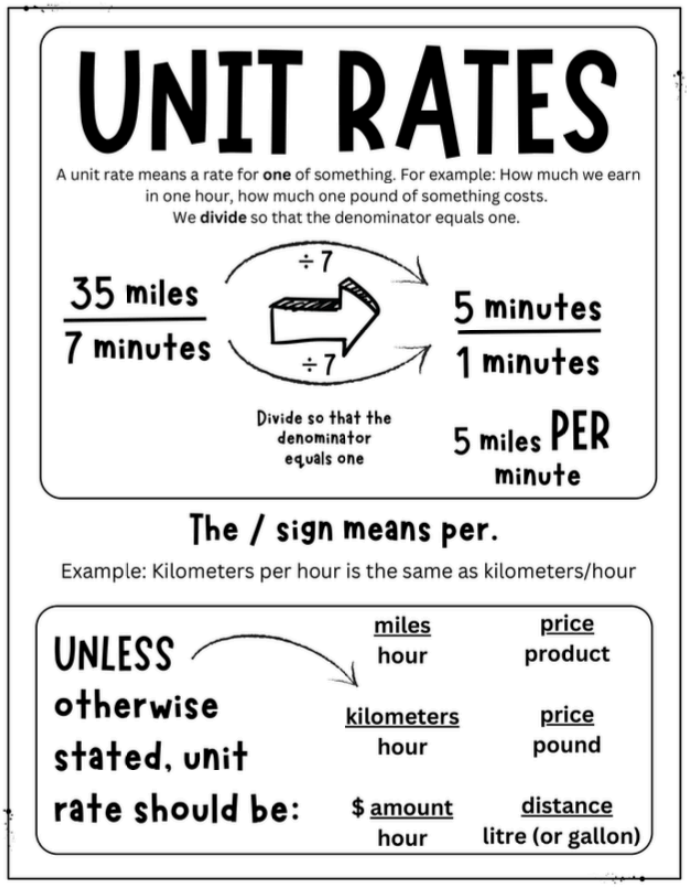
	8 : 24 = 1 : 3	
7 : _____ = 49 : 63		6 : 7 = _____ : 21
_____ : 2 = 28 : 8		3 : 6 = _____ : 30
8 : 3 = _____ : 27	20 : 36 = _____ : 9	18 : 10 = _____ : 5

Problem Solving–Equivalent Ratios:

The ratio of kiwis to mangoes in a fruit bowl is 4 : 9. If there are 44 kiwis, how many mangoes are there?	There are 2 trucks for every 5 cars in the school parking lot. If there are 25 cars, how many TOTAL vehicles are there in the parking lot?	The ratio of girls to boys in a basketball club is 3 : 4. There are 24 girls. How many boys are in the basketball club?

Rates/Unit Rates:





You can drive 450 miles in 6 hours. How many miles can you travel in one hour?	6 pounds of almonds cost $39.54. What is the cost per pound?	Jada babysat 20 hours and earned $180. How much did she make per hour?	While training for a race, Laura ran 12 miles in 75 minutes on a treadmill. How long did it take for her to run 1 mile?
A snail travels 12 cm in 4 minutes. How far does the snail travel per minute?	Lyla types 63 words in 3 minutes? How many words does she type in 1 minute?	David paid $17.82 for 9 gallons of gas. What was the cost per gallon?	Benjamin drove 252 miles in 4 hours. How many miles did he travel in 1 hour?

Problem Solving-Rates/Unit Rates:

*Hint: Find the unit rate first!

Susie read 288 pages in 12 hours. At this rate, how many pages did she read in 16 hours?	The teacher supplied 72 markers for 6 students. At this rate, how many markers would he need to supply for 10 students?	At a party, there are 36 cookies for 16 people. How many cookies are needed for 20 people?

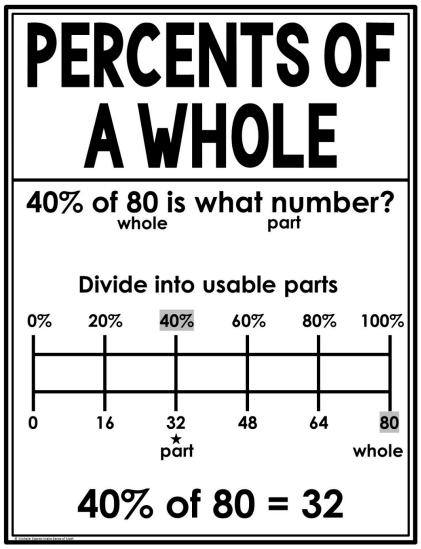
Fractions, Decimals, and Percents:

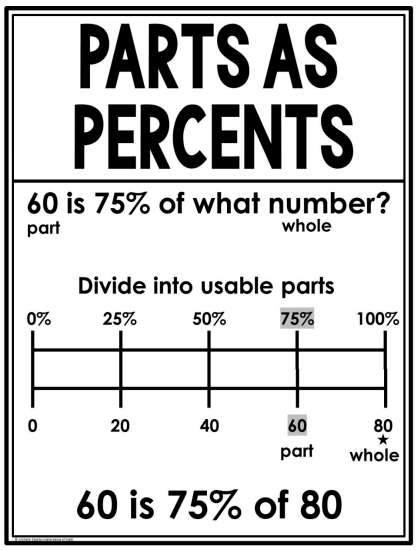
A **percent** is a rate per 100 where 100 is a total of something.
It can be represented with a % sign.

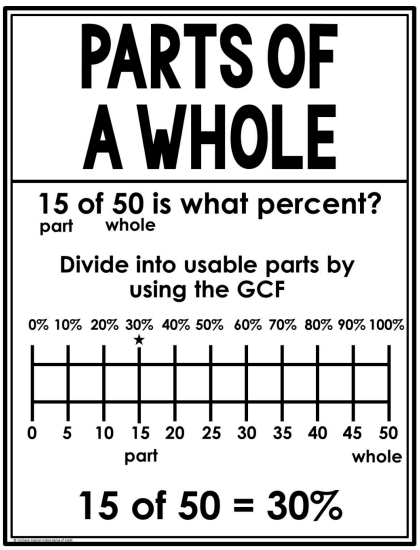
Converting a **FRACTION** to a…	Converting a **DECIMAL** to a…	Converting a **PERCENT** to a…
DECIMAL 1. Divide the numerator by the denominator.	**FRACTION** 1. Remove the decimal 2. Write as a fraction using the last decimal place value as the denominator. 3. Simplify	**DECIMAL** 1. Put the percent over 100. 2. Write as a decimal using place value OR divide by 100.
PERCENT 1. Divide the numerator by the denominator. 2. Remove the decimal and write as a fraction using the last decimal place value as the denominator. 3. Write as a percent.	**PERCENT** 1. Remove the decimal and write as a fraction using the last decimal place value as the denominator. 2. Write as a percent.	**FRACTION** 1. Put the percent over 100. 2. Simplify 3. Convert to a mixed number if the percent is greater that 100%.

Percent	Decimal	Fraction
24%		
	0.72	
		$\frac{7}{10}$
	1.25	
67%		
		$1\frac{1}{5}$

Percentages and Double Number Lines:







Problem	Double Number Line	Answer
8 is what percent of 40?	0 8 40 0% ? 100%	
There are 60 students at the dance. 40% of them are 6th graders. How many students at the dance are 6th graders?	0 ? 60 0% 40% 100%	
25% of the books in the library are science fiction. If there are 11 science fiction books, how many total books are in the library?	0 11 ? 0% 25% 100%	

Percent of a Number:

To find the percent of a number means to find the PART given the whole and percent. **To find the percent of a number…**

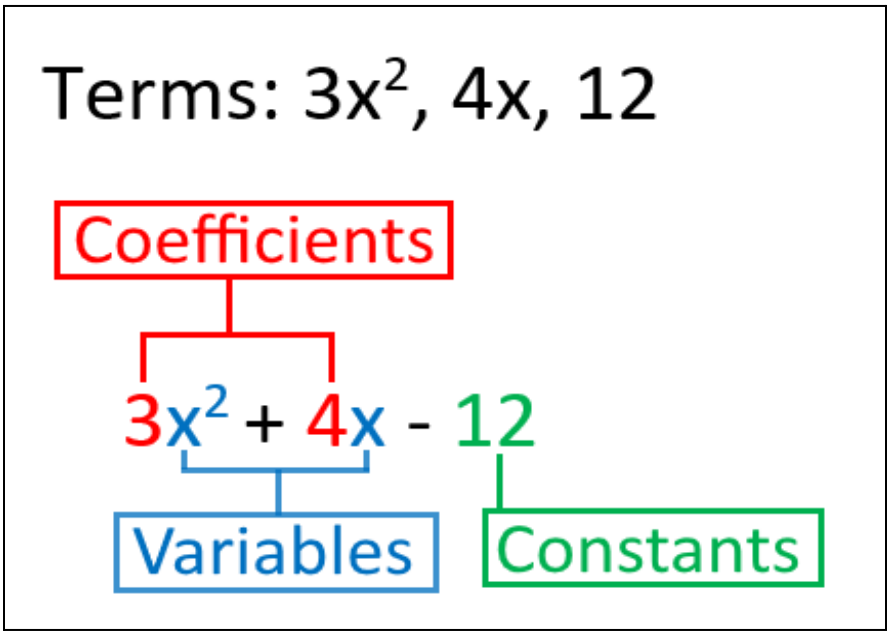
1. Change the percent to a fraction or decimal.
2. Multiply the percent (fraction or decimal form) by the whole.

The percent x the whole = the part

What is 10% of 45?	What is 32% of 60?	The sale price of every item in a store is 85% of its usual price. If the usual price of a backpack is $30, what is its sale price?

Week 5: Expressions and Equations

Parts of an Expression:



Identify the parts of the expression:

2x + 4y - 9 Terms: Coefficients: Variables: Constants:	4x - 6y + c - 2 Terms: Coefficients: Variables: Constants:	
$2x - 5 - 7x + 4z^2 - y$ Terms: Coefficients: Variables: Constants:	7a + 4a + 3b - 6 Terms: Coefficients: Variables: Constants:	3y - 1 + 8b + 15 Terms: Coefficients: Variables: Constants:

Translating Expressions:

Operation	Addition	Subtraction	Multiplication	Division
Key Words and Phrases	added to plus sum of more than increased by total of and	subtracted from minus difference of less than decreased by fewer than take away	multiplied by times product of twice of	divided by quotient of

the quotient of twenty-nine and a number h	
a number n plus forty-nine	
three divided by a number g	
the total of twenty-four and a number x	
the difference between eighteen and a number m	
a number k added to twenty-eight	
ninety-eight more than a number d	
a number j multiplied by fifty-six	
a number y increased by eighty-six	
twenty-nine to the w^{th} power	
a number q decreased by eighty-five	
the difference between a number f and two	
the quotient of a number t and thirty-seven	
a number s minus eighty-two	
the product of a number z and eighty-four	

Evaluating Expressions:

Evaluating Algebraic Expressions

Evaluate $2y + 3$ for $y = 4$

Step 1:
Substitute 4 for y. $2(4) + 3$

Step 2:
Multiply. $8 + 3$

Step 3:
Add. 11

Evaluate when x = 4

$3x + 15$ $x^2 - 10$ $8x + x - 2$

Evaluate when x = 7 and y = 2

$7x + y$ $9y - 10 + 2x$ $y^3 + 5x - 20$

Week 6: Expressions and Equations (Continued)

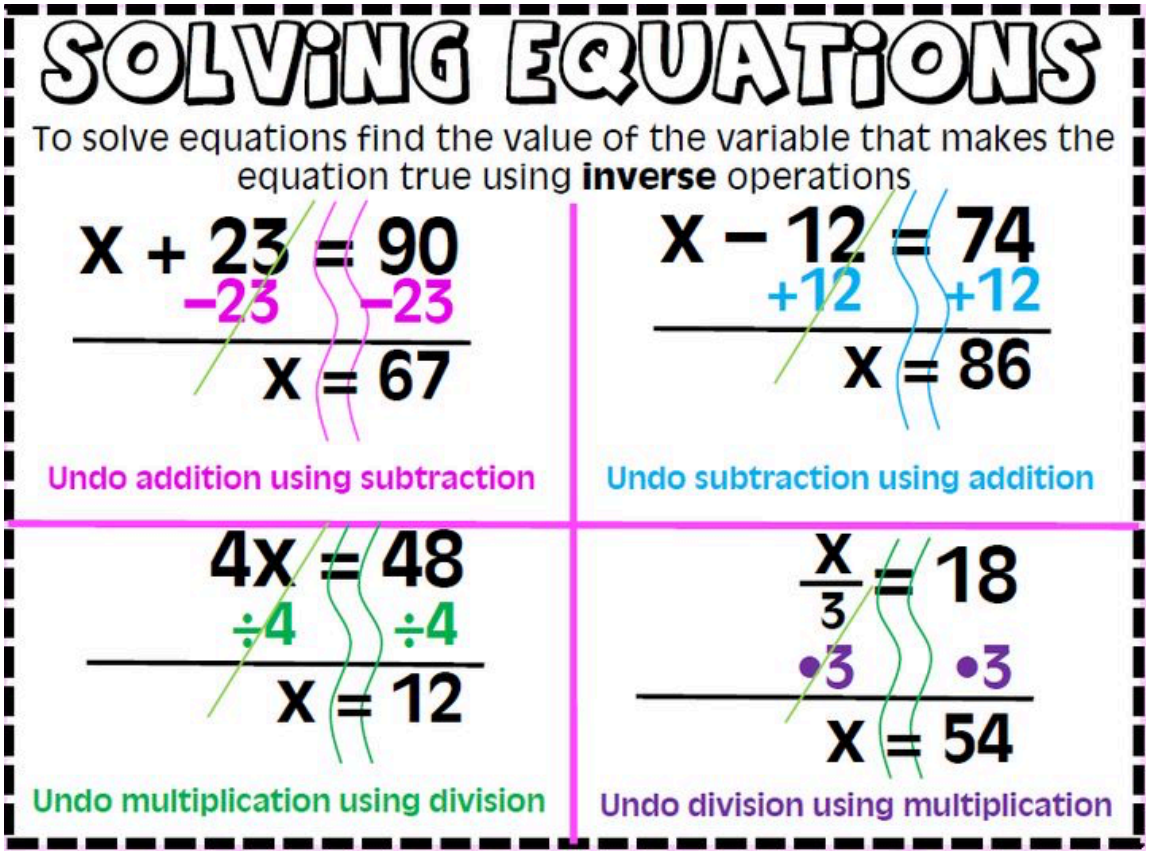
Distributive Property

3(x−7) Original problem 3(x−7) We will distribute the 3 throughout the parentheses. 3(x) − 3(7) Multiply the 3 times the x. Then Multiply 3 times 7. **3x − 21** Simplify		9(w + 12) Draw a tape diagram: Simplified expression:	10(3b + c - 12) Draw a tape diagram: Simplified expression:
4(x - 5) Draw a tape diagram: Simplified expression:	12(3 + 2y) Draw a tape diagram: Simplified expression:	5(7r + s + 9) Draw a tape diagram: Simplified expression:	3(p - 17) Draw a tape diagram: Simplified expression:

Combining Like Terms

5x + 9 + 2x **5x + 2x = 7x** **9 = 9** **7x + 9**		3a + 4b + 2a - 2b	4y + m + 5 +3y + 3m
5n - n + 8n + 10	4(3x + 6) + 8x - 12	3(5x + 6) - 7x + 2	8h + 3(2h + 5) + h + 4

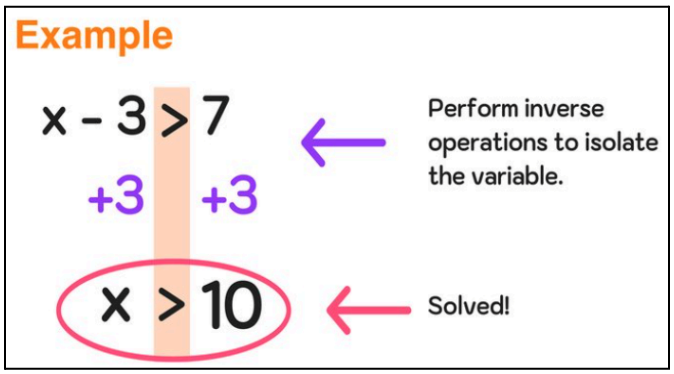
Solving Equations:



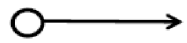
11 + z = 44	r – 18 = 102	4g = 24	30 = $\frac{a}{3}$
p - 17 = 34	$\frac{t}{4}$ = 9	g + 21 = 67	s - 4.65 = 6.3
16j = 32	11.3 = y + 5.5	12r = 156	b ÷ 10 = 5

Week 7: Expressions and Equations (Continued)

Solving and Graphing Inequalities:



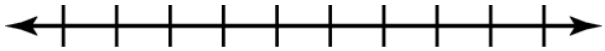
Graphing Inequalities

>		greater than
<		less than
≥		greater than or equal to
≤		less than or equal to

x + 6 > 12

Inequality: _____

Graph:



$\frac{m}{5} \geq 6$

Inequality: _____

Graph:

9f ≤ 63

Inequality: _____

Graph:

k - 5 < 3

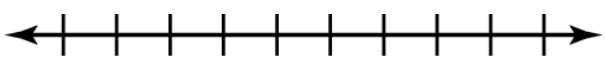
Inequality: _____

Graph:

12g < 72

Inequality: _____

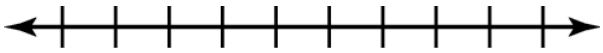
Graph:



b + 10 ≤ 15

Inequality: _____

Graph:



Independent and Dependent Variables:

Independent Variable (IV) – The variable that **CAUSES** something, or **changes the DV**.
- -The independent variable is **ALWAYS** graphed on the **x-axis**.
- -The independent variable is represented as the **"x value"** in a table.

Dependent Variable (DV) – The variable that is a **RESULT/EFFECT** of something. It **DEPENDS on the IV**.
- -The dependent variable is **ALWAYS** graphed on the **y-axis**.
- -The dependent variable is represented as the **"y value"** in a table.

EXAMPLE: You work 8 hours and get paid $96.
Independent Variable: # of hours worked
Dependent Variable: Money earned

Identify the independent and dependent variables below:

Your teacher is planning a pizza party for the class. The more students that attend, the more pizzas she will need to buy.		You earn money for selling shirts at the local fair.	
IV:	DV:	IV:	DV:
You decide to get a summer job mowing lawns in your neighborhood. As hours pass by, you mow more lawns.		The number of participants who join the kickball tournament will determine how many teams are needed.	
IV:	DV:	IV:	DV:

Graphs, Tables, and Equations:

We can represent situations through graphs, tables, and equations. Here is an example:

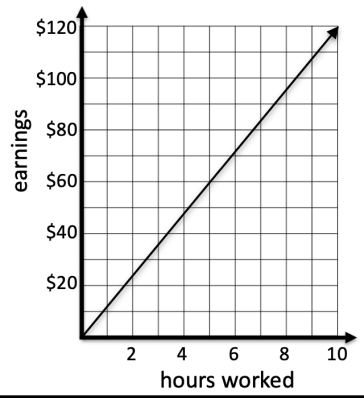
Situation:
At your new job, you earn $12 for every hour (h) that you work.

Independent Variable: Hours Worked
Dependent Variable: Money Earned
Equation: m = 12h

Table:

Hours Worked (h)	0	1	2	3	4	5	6
Money Earned (m)	0	12	24	36	48	60	72

Graph:



Situation: A bakery sells muffins for $4 per muffin. Use an equation, table, and graph to represent the money earned (e) according to the number of muffins sold (m).

Independent Variable:

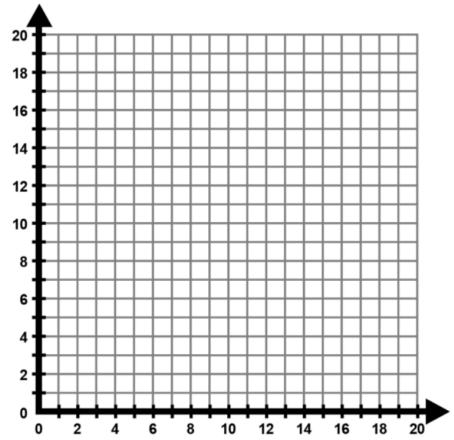
Dependent Variable:

Equation:

Table:

	0	1	2	3			
	0						

Graph:



Situation: Analeigh's sister is 10 years older than she is. Use an equation, table, and graph to represent the age of Analeigh's sister (s), according to Analeigh's age (a).

Independent Variable:

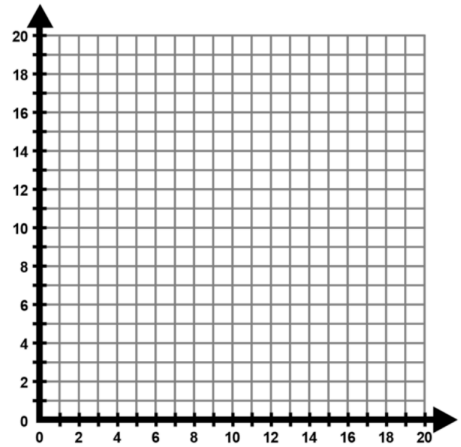
Dependent Variable:

Equation:

Table:

	0						
	0						

Graph:



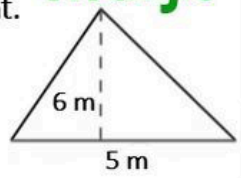
Week 8: Geometry

Area of Parallelograms and Triangles:

Triangle

The area of a triangle is calculated as $\frac{1}{2}$ base x height.

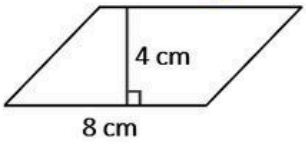
$A = \frac{1}{2} \times 5 \times 6 \rightarrow A = \frac{1}{2} \times 30 \rightarrow A = 15\ m^2$

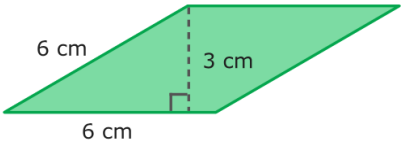


Parallelogram

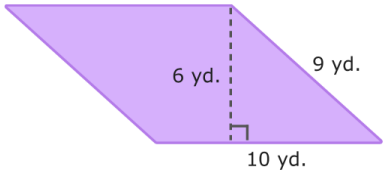
The area of a parallelogram is calculated as base x height.

$A = 8 \times 4 \rightarrow A = 32\ cm^2$

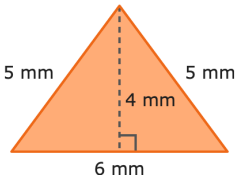




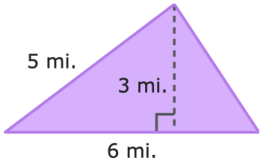
Formula:
Base:
Height:
Area:



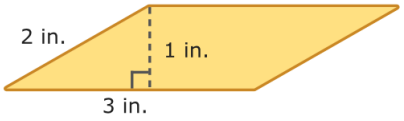
Formula:
Base:
Height:
Area:



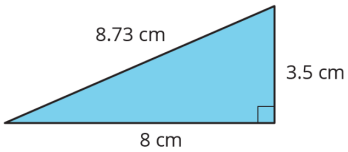
Formula:
Base:
Height:
Area:



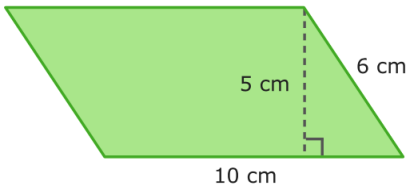
Formula:
Base:
Height:
Area:



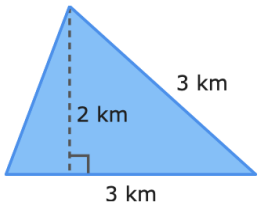
Formula:
Base:
Height:
Area:



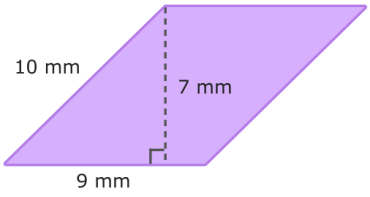
Formula:
Base:
Height:
Area:



Formula:
Base:
Height:
Area:



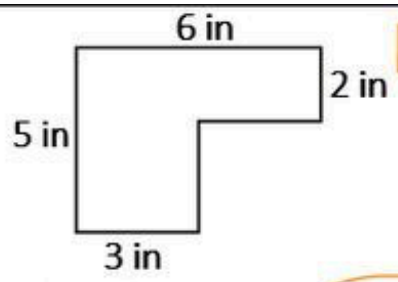
Formula:
Base:
Height:
Area:



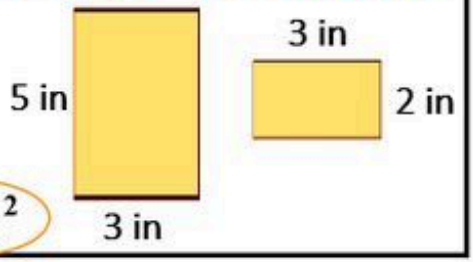
Formula:
Base:
Height:
Area:

Composite Area:

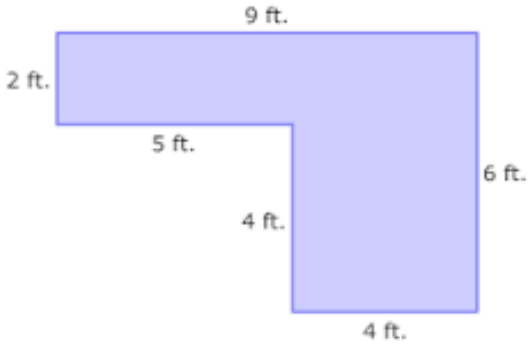
1. Divide the irregular shape into separate regular shapes (such as square, rectangle, or triangle).
2. Find the area of each separate shape.

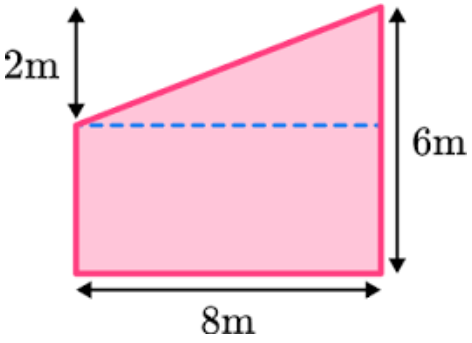


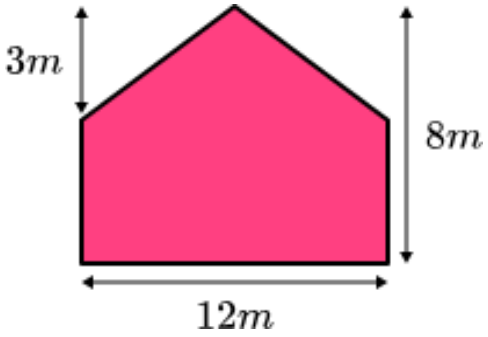
Irregular Shape

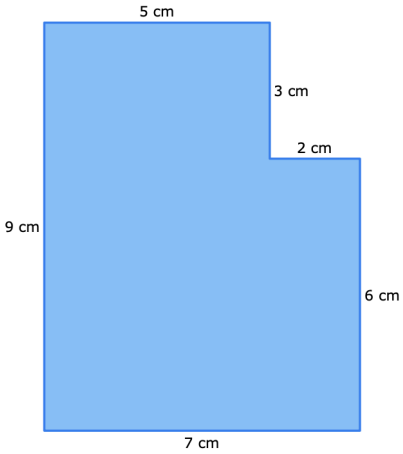


$A = (5 \times 3) + (3 \times 2) \longrightarrow A = 21\ in^2$





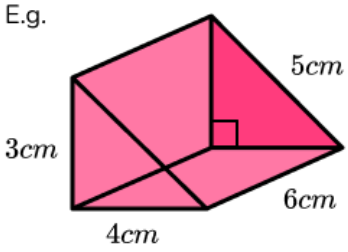




Surface Area:

The **surface area** of a three dimensional shape is the total area of all of the faces. To find the surface area of a shape, we find the area of each face and add them together.

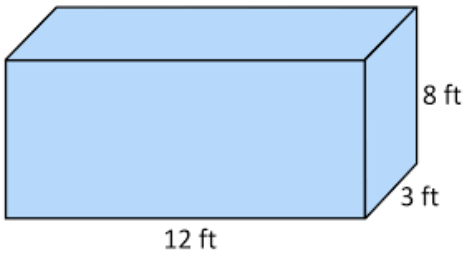
E.g.



Face	Area
Front	1/2 x 4 x 3 = 6
Back	6
Bottom	4 x 6 = 24
Top	5 x 6 = 30
Left side	3 x 6 = 18

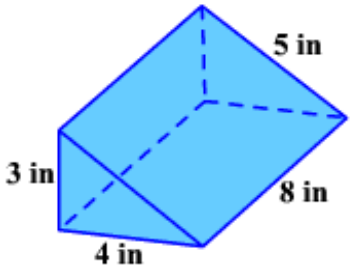
Total surface area = 6 + 6 +24 +30 +18
= 84cm²

THIRD SPACE LEARNING



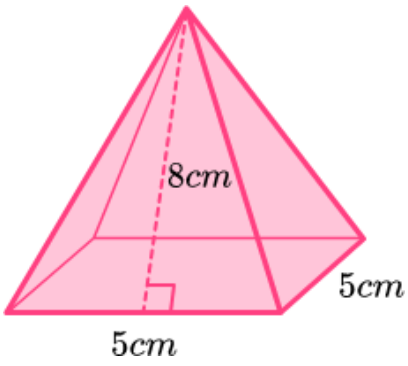
Front:
Back:
Top:
Bottom:
Left:
Right:

Surface Area:



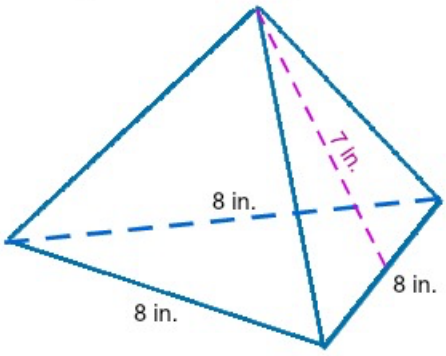
Front:
Back:
Bottom:
Left:
Right:

Surface Area:



Bottom:
One Side:
All Sides Combined:

Surface Area:



Bottom:
One Side:
All Sides Combined:

Surface Area:

Volume:

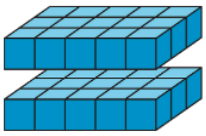
Formula: length x width x height

Volume of Rectangular Prism

If a rectangular prism has edge lengths of 2 units, 3 units, and 5 units, we can think of it as 2 layers of unit cubes, with each layer having $(3 \bullet 5)$ unit cubes in it.

So the volume, in cubic units, is:

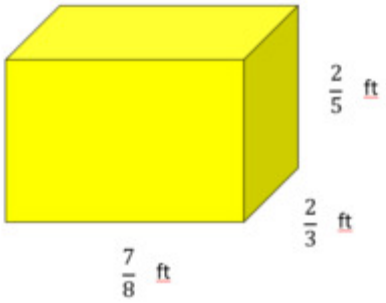
$2 \bullet 3 \bullet 5$

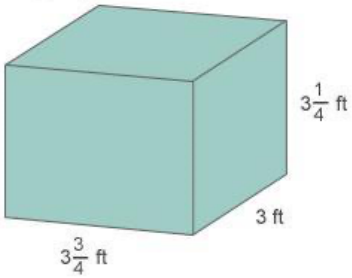


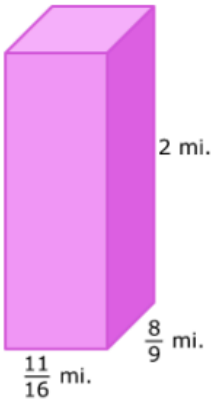
The volume of a rectangular prism with fractional edge lengths can also be found by multiplying the fractional edge lengths

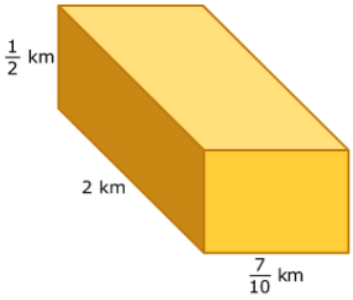
The volume of a prism that is $\frac{1}{2}$-inch tall, $\frac{3}{2}$-inch wide, and 4 inches long would be:

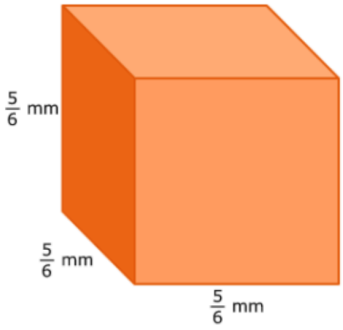
$$\frac{1}{2} \bullet \frac{3}{2} \bullet 4$$











Week 9: Statistics

Statistical Questions:

Statistical Question - A question that anticipates and accounts for a ***variety of answers. (Does not have an exact answer)***

Ex:

- How many text messages do you send each day?
- What is the minimum driving age for each state in the US?
- How many movies do you own?

Non-Statistical Question - A question with **one set answer** that will not change.

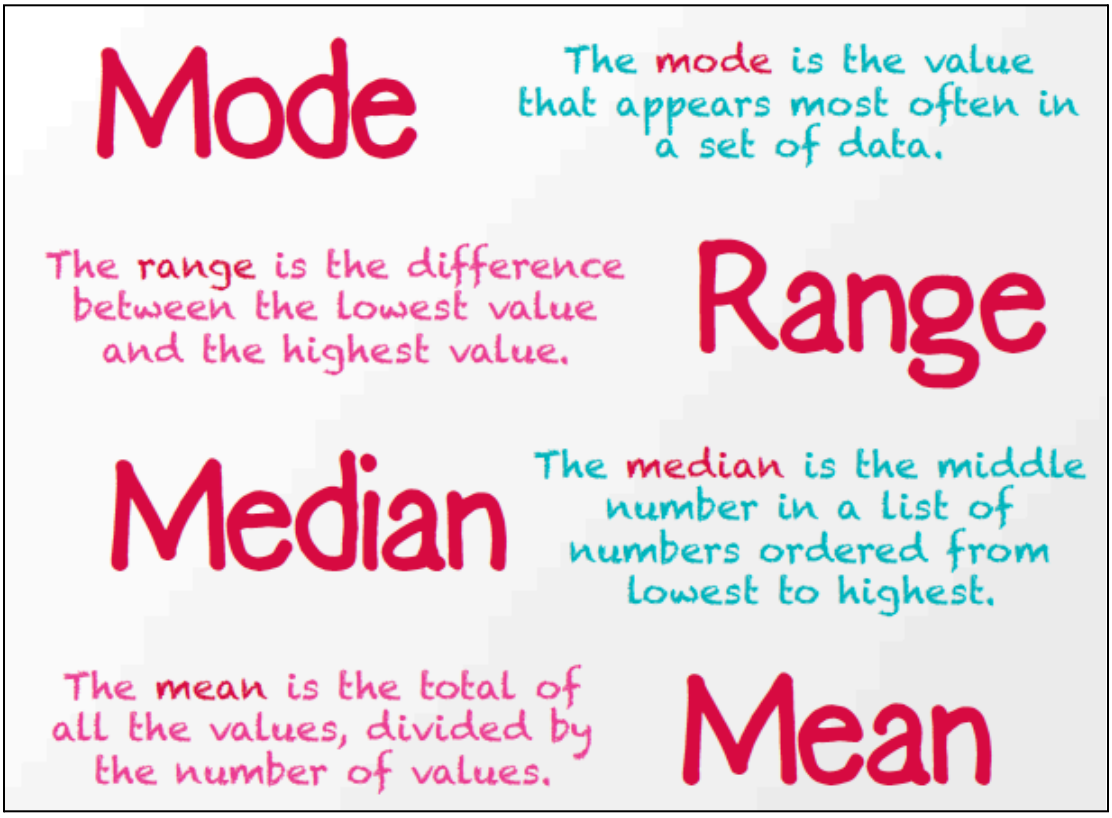
Ex.

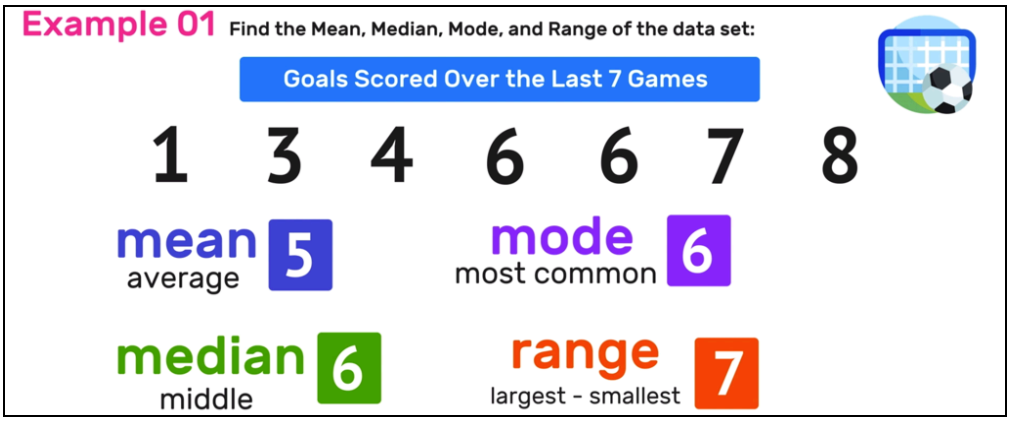
- How many days are in March?
- How tall is Mount Everest?
- How many people attended the concert last night?

Identify if the following is a statistical question. Assume that these questions are being asked to 20 students in your math class:

- How old are you? Y or N
- What is your math teacher's name? Y or N
- How many days did it snow in February? Y or N
- What is your favorite color? Y or N
- How many siblings do you have? Y or N

Mean, Median, Mode, and Range:





During a statistics lesson, students were told to measure the amount of sugar in 5 sugar packets. Liam and his lab partner measured these masses (in grams): 3, 4, 2, 3, 3 Mean: Median: Mode: Range:	A car dealership tracked the number of cars sold each month: 81, 75, 78, 83, 81 Mean: Median: Mode: Range:
A pilot counted the number of empty seats on 8 planes that he flew: 1, 1, 3, 4, 1, 4, 4, 2 Mean: Median: Mode: Range:	Collin's coach wrote down how many kilometers he had run over the past 5 days. 7, 1, 1, 1, 7 Mean: Median: Mode: Range: